

of the Royal Society (twice), of the Royal Astronomical Society (twice), and of the Institute of Civil Engineers. Most scientific societies are proud to have his name on their list of members; he is one of the eight *Associés Étrangers* de l'Académie des Sciences à Paris.

A. WINNECKE

FOREIGN ORDERS

IN several articles and letters in vol. viii. of *NATURE* the question of the conferment of foreign orders on British subjects, so far as it concerns men of science, was pretty thoroughly discussed, as well as the proposal made in Parliament, in 1873, to establish an order of intellectual merit. The subject has again come up in connection with the distribution of awards at the close of the Paris Exhibition, and there has been much disappointment and even bitterness of feeling expressed at the refusal of our Government to allow British subjects to accept the coveted Cross of the Legion of Honour. It is well known that many of our men of science, as well as others, possess foreign orders in abundance, and that our Government takes no notice unless consulted, when, on the ground of some antiquated regulations, it thinks it its duty to refuse permission to accept such orders. If not illegal, it is at any rate weak and childish on the part of Government to take such a course, worthy of the days of "good" Queen Bess, who wished her dogs to wear no collars but her own. In the case of the Exhibition awards it has been shown that this decision on the part of our Government falls with peculiar hardship on British exhibitors. It will very naturally be inferred by the general public that as a body they occupy an inferior position to foreign exhibitors, who are allowed to accept the great French honour, which is conspicuous by its absence from the awards in the British department. It is especially hard, we think, upon those who have served on the British jury. From some parsimonious caprice on the part of Government no allowance was made to those who served as jurors at the Paris Exhibition, and the eminent men of science who gave up their time and knowledge for the benefit of the country and the world not only go entirely unrewarded, but must have been seriously out of pocket. One case we know of—and we believe it is not the only one—where a well-known chemist, besides incurring serious expense, worked so hard as to materially affect his health, and all not even for bare thanks.

So far as we ourselves are concerned, we are not anxious to see men of science eager to obtain, or easy to be satisfied, with such honours as those which, if they are simple enough to ask, they are told they must not accept. Our own Government is niggardly enough in its recognition of the services done by the scientific worker to his country; and how can it be otherwise with a Cabinet that has scarcely a member, we believe, who knows the difference between a telescope and a telephone. Fortunately for his self-respect, the purely scientific worker, however eminent he may be as such, is rarely, if ever, embarrassed by the offer of honours from our own Government. These are reserved for the militant and civil services, where, as a rule, they are least

requisite, seeing that those who obtain them are generally pretty well paid for their zeal. As for what is called the "honour" of knighthood, it has now become so common, so easily obtainable, that the mere offer of it must make one suspect that after all he must be regarded by its dispensers as a very tenth-rate man. We know of a humble grocer in a small country town in the north in which a statue erected to the late Prince Consort was unveiled by the Queen, when the decent man happened to be provost; of course he was dubbed "Sir," and his life was ever after rendered miserable by the waggish little urchins of the town, who would gravely pass their cans across the counter for "A hawbee worth o' treacle, Sir Dawvid." And C.B. is rapidly becoming little better, so that virtually in this country there is no imperial honour attainable by the purely scientific worker, however eminent, which his self-respect would permit him to accept entirely without question.

As to the creation of an order of merit for men of high eminence in science, literature, or art, we have already expressed our opinion. In the present state of things it is better to let the existing chaos alone. Who is there among those who would now have the dispensation of such an honour who is capable of selecting those really most worthy of it? Had we a Minister of Science, with a council of scientific specialists to guide him, then there would be some chance that such an honour would reach those who really deserved it; but at present it is hopeless. Indeed the devotee of scientific research would much prefer that Government, if it desires to do science honour, would do so by giving her substantial aid to pursue her work, than that it should load her servants with all the honours at her Majesty's disposal.

Still with the parsimony both of money and "honours" at home, it is peculiarly hard that scientific men can accept the distinctions which foreign governments are ready enough to award only as if they were contraband goods. Literature and art are abundantly rewarded in both ways, but, like virtue, science, on which the substantial welfare of the world depends, is its own reward; but this, unfortunately, is not marketable. We trust that the present outcry will lead to a modification of the unreasonable regulation as to foreign orders.

THE "ENCYCLOPÆDIA BRITANNICA"

The Encyclopædia Britannica. Ninth Edition. Vols. vii. and viii. (*Deacon to Fakir*). (Edinburgh: A. and C. Black, 1877-78.)

IN the article *ENCYCLOPÆDIA*, which finds a place in the second of the volumes now before us Mr. Lyons defines an encyclopædia as a book treating of all the various kinds of knowledge. The definition applies well enough to the older encyclopædias, composed when it was still thought practicable to set forth in a single work all that was worth knowing in science and art. To define the province of a modern encyclopædia is a more difficult task, which will probably be avoided by every one who is not compelled either to plan and edit a work of the kind, or to review an editor's plan. Smaller cyclopædias, on the type of the "Conversations Lexicon," naturally limit

themselves to such an abstract of miscellaneous information as may be of service to the ordinary reader. No article is admitted which requires for its comprehension either special preparation or special application. The "Encyclopædia Britannica" aims at something more than this; it addresses itself to the general readers, but it also has a real value for students. On this large plan it becomes very difficult to adjust the respective claims of the two classes to whom the work appeals, and the practical solution must probably be to give what is likely to attract purchasers of a special class without repelling the general public in larger numbers. This seems to be what Prof. Baynes has in view when, along with such articles of general interest as Mr. Freeman and Mr. Gardiner's ENGLAND, he gives us on the one hand an abstruse essay on ELASTICITY, bristling with mathematical formulæ, and on the other a selection of hints for success in playing EUCHRE.

The chief difficulty in successfully carrying out so large a plan lies in the scientific monographs, and more especially in the treatises on subjects which cannot be thoroughly handled without mathematics. In the ninth edition these articles are of a very high class. The editor must be congratulated who, within the two volumes now before us, has articles by Prof. Clerk Maxwell on DIAGRAMS, DIFFUSION, and ETHER, by Sir W. Thomson, on ELASTICITY, by Prof. Cayley on EQUATION, and by Prof. Chrystal on ELECTRICITY. All these are admirable pieces of scientific writing of different kinds. The article Electricity is a singularly clear and well-arranged exposition, which, if printed as a separate volume, would form the best possible text-book for students who are well advanced in pure mathematics. On the other hand Prof. Cayley's account of Determinants and the Theory of Equations is not of the nature of a text-book, but can be appreciated only by those who have some knowledge of the subject. Prof. Maxwell's papers, full of his usual quaint illustration and felicitous turns of expression, sometimes amounting to scientific epigram, would be perfect encyclopædia articles if the ordinary reader possessed accurate habits of thought on physical subjects without actual physical knowledge. But in the present condition of things they are most likely to serve an opposite purpose in clarifying the thoughts of those who have already some reading on the topics dealt with. All these papers suggest the question whether an Encyclopædia of general information ought not to limit itself to articles which can be followed by a painstaking reader who has no other preparation or assistance than he can find in the Encyclopædia itself. Yet, on the other hand, we are grateful to the editor who has opened his pages to so much valuable writing which otherwise might never have appeared at all.

In passing from this topic we may notice, in the article ENERGY, a curious over-statement of the inference to be drawn from the ingenious speculation associated with what are called Prof. Maxwell's "demons." We are told by Mr. Garnett that this speculation "shows that the principle of dissipation of energy has control over the actions of those agents only whose faculties are too gross to enable them to grapple with those portions of matter in virtue of the relative motions or relative positions of which the energy exists with which they are concerned."

Mr. Garnett has forgotten the trap-doors which the hypothetical demons command. In fact the simplest form of the hypothesis would be to drop the demons, and make the trap-doors themselves intelligent beings, possessing resistance, and capable of moving without expenditure of energy. Such beings would not be controlled by the law of dissipation, but they would differ from all agents known to observation in a more essential point than the possession of subtler faculties.

Passing over less abstruse branches of science, which are well represented in these volumes by Prof. Huxley, Mr. Wallace, Prof. McKendrick, and other names of mark, we must devote a few sentences to the articles which deal with the history of human life and the movements of human thought. A valuable feature in the editor's plan is the prominence given to subjects connected with the ideas, habits, and traditions of primitive man. In this line we have an excellent article on DELUGE, by Mr. Cheyne, and a very interesting paper on DEMONOLOGY, by Mr. E. B. Tylor. Some of the facts adduced in the latter article may probably need further sifting. We do not think so highly as Mr. Tylor does of Maury's book on magic. Lenormant's work on Chaldean magic must be used with reserve, and, to mention but one other point, the theory of a schism between Indians and Iranians, connected with a change in the meaning of the word *deva*, is open to grave objections. Among properly philosophic papers Mr. Sully's EVOLUTION is valuable from its comprehensive survey of the history of the subject, while Mr. Sidgwick's sketch of the progress of ethical speculation, which may be said to replace Sir J. Mackintosh's dissertation, written for the seventh edition of the "Encyclopædia," gives striking proof of the real advances that are being made in what is often regarded as the most stationary department of human thought.

The articles in Geography, History, and Biography, which to the general reader form the most valuable part of a book of reference, are as a rule very good. Subjects of special importance or attractiveness are treated in these as in the previous volumes by writers of distinguished position and special information, while the minor articles speak well for the diligence and scholarship of the permanent staff. In a few cases material taken over from the last edition might with advantage have been more strictly revised. In conclusion, we would offer one or two hints for this part of the work. It is very desirable that bibliographical references should be as complete and uniform as possible. At present there is considerable inequality in this respect, both as regards the statement of sources of information, and the enumeration in the biographical articles of authors' works and their editions. In such an article as that on DICTIONARY it would be unfair to expect completeness or absolute freedom from error, and one does not complain of such a slip as the reference to Rabbi Iona ibn Ganach's Lexicon as still unpublished, when in reality it has been edited by Neubauer. But an enumeration of modern books upon Ethiopic ought not to have omitted Dillmann's Grammar and Lexicon, and an article on EPHESIANS is not complete without reference to Holtzmann.

There is one other point which a reviewer ought not to pass over. In every encyclopædia there must be a certain

amount of mere compilation by men who have not made an independent study of the subject dealt with. But the public has a right to expect that work of this kind shall not appear with the signature of men of known literary standing. In making this remark we have an eye on Principal Tulloch's article, EUSEBIUS. The whole article is the slimmest literary hack-work, and the notice of Eusebius' works contains mistakes which can be best explained by supposing that the writer was hastily abridging from Smith's "Dictionary," from which several sentences are copied almost word for word. What is said about the "Chronica" is one tissue of error and confusion. The whole work is described in terms that apply only to the second book. The Latin translation of the Armenian version appears to be confounded with the original work, and there is not one syllable to indicate that only fragments of the latter exist. So, again, the "Præparatio Evangelica" is described as a collection of facts and quotations from the works of the ancient philosophers, without any allusion to the important fragments of ancient historians which it embodies. The celebrated Nitrian MS. of the Theophania is said to have been found in an Italian Monastery. And finally, there is no account of the editions of Eusebius, not even of Schöne's great edition of the Chronica.

OUR BOOK SHELF

Cyprus: its History, its Present Resources, and Future Prospects. By R. Hamilton Lang. Illustrations and Maps. (London: Macmillan and Co. 1878.)

THIS, we venture to think, is really the most important and useful contribution to a knowledge of our new dependency that has been published since the surprise was announced. Mr. Lang's long residence in the island and his position there have given him exceptional advantages to acquire a thorough knowledge of it in all its aspects. He has, moreover, made diligent research into the history and antiquities of the classical island, and has succeeded in presenting in this volume a clear and instructive account of these. Mr. Lang maintains that Cyprus must have had a somewhat civilised population before the arrival of either Greek or Phœnician colonists, and that the remains of early writings which have been discovered prove these earlier inhabitants to have been Aryan, and not Semitic, and probably of the same parent stock as the Greeks. About one-half of the work is devoted to the history of the island. In the chapter devoted to agriculture and produce Mr. Lang shows that, in this respect, the capabilities of the island are very large, and that, with improved systems, it might really be made one of the most fruitful of our dependencies. He himself made long experiments in farming, and with the most satisfactory results; and for intending settlers in the island this part of his work will prove of much value. Mr. Lang gives a condensed account of M. Gaudry's researches on the minerals of the island; but our knowledge of its geology is by no means satisfactory, and we trust with Mr. Lang that no time will be lost in getting a thorough geological survey of the island. The chapters on archæology and rock tombs and their contents are of special interest; and of great practical value is the chapter devoted to "my farm in Cyprus." Mr. Lang is very hopeful of the results of this annexation. One of the most interesting results, so far, in our opinion, is his own work on the island. The five beautiful maps by Stanford add much to the scientific value of the work.

Studies in Physical Science. By W. J. Millar, C.E. (London: Marlborough and Co.)

IT is difficult to imagine what want this little book of 102 pages is intended to fill. In form and matter it appears not unlike a schoolboy's notes of some popular lectures. If any one really desires simple and accurate information on the elementary propositions of physical science he can have no difficulty in finding it in the many brief works which have recently appeared from the pens of the foremost authorities on each special branch. What are we to make of the following paragraphs when it is stated in the preface that "the whole has been carefully revised and the most recent scientific views considered"? "The vapours which ascend from the surface of our globe are the channels by which the electricity of the atmosphere is supplied. Evaporation is an active source of electricity, and thus the clouds, which are made up of hollow vesicles of aqueous vapour filled with air, contain a considerable quantity of electricity stored up and ready to be discharged." Concerning the telephone, the author remarks that its "action appears to depend upon the principles of magnetism, electricity, and acoustics." Further quotation is needless.

Hydrostatics and Pneumatics. By Philip Magnus, B.Sc., B.A. (London: Longmans and Co. 1878.)

THIS work forms the seventh volume of the "London Science Class-Book Series," jointly edited by Prof. G. C. Foster and the author of the work before us. The books are intended for "school purposes," but we cannot imagine that the author of the "Hydrostatics and Pneumatics" can be acquainted with science teaching in schools, or its requirements, to judge of his treatment of the question of the relative densities of air at different heights (p. 125), or of the method of finding the difference of height of two stations by means of a barometer, supposing the temperature and force of gravity constant (p. 127). Or again, if we glance at pp. 18, 41, and 58, we perceive at once that the treatment is of far too complex a nature to be taught to young boys in Form who probably have one hour, or at most two, to devote to the subject in a week. For advanced boys in Upper Fifth and Sixth Forms the book will undoubtedly prove useful, provided they can devote several hours a-week in any one Term to the subject. The work is clearly written for the most part, and there are but few omissions. We do not notice, however, any mention of the experiments of Mr. Tomlinson and Prof. Van der Mensbrugghe on surface tension, nor of the experiments of Venturi, Bernoulli, and Magnus, on the lateral action of a fluid in motion.

The Bulb Garden; or, How to Cultivate Bulbous and Tuberous-rooted Flowering Plants to Perfection. By Samuel Wood. (London: Crosby Lockwood and Co. 1878.)

IT is not too much to say that the best part of the present book is its cover. The binder has certainly performed his part well, and produced a pretty-looking book, but we must look no further than the cover for a word of eulogy. We have only to turn over the fly-sheet to read the title-page, and we are startled by an extraordinary gaudily-coloured plate, which suggests a design for a patchwork counterpane, but which, upon closer examination, turns out to be one for a bulb garden. With this we are not prepossessed; and the next coloured plate still further lessens our appreciation of the author's artistic taste. We leave the plates and turn to the text, in the hope of finding the literary character of the book such as to make amends for its artistic shortcomings; but still we are disappointed, for, when we find such plants as *Dieleytra*, *Tritoma*, *Lychnis fulgens*, the *Hellobores*, &c., classed as bulbs, we are inclined to ask, Does the author know what a bulb is?